Communication Assets Survey & Mapping: Planning Emergency Communications

The Communication Assets Survey & Mapping (CASM) tool is provided by the DHS Cybersecurity and Infrastructure Security Agency (CISA) to assist Federal, State, Tribal, Local, and NGO public safety agencies to operate and interoperate more effectively and efficiently during large scale emergencies and events. CASM enables agencies to inventory, share, and coordinate emergency communications resources nationwide. **Figure 1** is a high level depiction of the system.

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Effective operations of critical communications during an emergency requires prior planning, exercise, and training. Planning necessitates detailed information about available resources and a means to share that information in a standardized format and terminology. Needs and available capabilities can then be identified and pre-coordinated at the same time that gaps and incompatibilities are identified and mitigated.

Planning to Communicate Effectively in the Midst of Chaos

Establishing emergency communications during unplanned large-scale events is a complex undertaking. These events typically involve agencies of multiple disciplines and levels of government, many traveling to an unfamiliar jurisdiction. A vast array of technology and personnel skill sets are made available, each with specific capabilities and constraints. The challenge facing communications planners is to optimize the utilization of those technologies and skill sets with local infrastructure, personnel, and spectrum. Thus, prior planning and practice is critical to a coordinated response. In turn, critical to both prior planning and on-site planning is a detailed understanding of the resources with potential to be employed. **CASM provides all agency planners with a system that enables them to document, share, and plan the use of those resources in a common environment.**

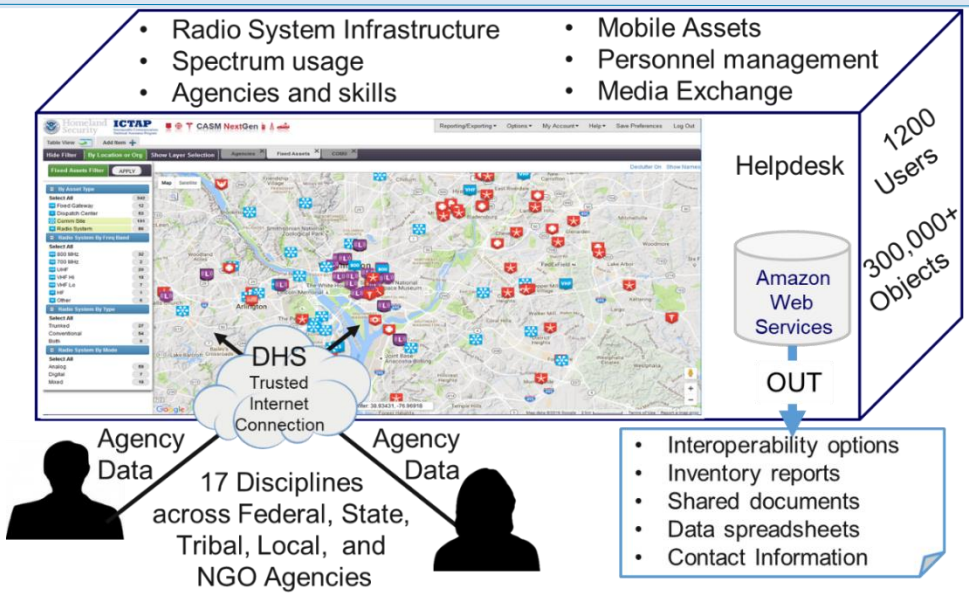

Figure 1: Overview of CASM interface where users from various agencies can coordinate diverse resource information in a common environment

CASM supports the National Emergency Communications Plan (NECP)

CASM supports the NECP - Goals 3, 4, and 5 - by enabling agencies nationwide to inventory and share detailed emergency communications resource information. This information can be used to ensure operability, coordinate interoperability, and provide training to all disciplines across all levels of government.

As the NECP Objective 4.2 notes, "Knowledge of the availability and state of all interoperable communications assets is essential to coordination efforts. At a minimum, public safety organizations need to share current communications systems information with contiguous public safety agencies and other organizations that provide or receive mutual aid, share infrastructure, or participate in planned events. Sharing active, available features, functionality, and capabilities of communications resources with partners can expedite communications coordination for both incidents and planned events."

What Resources Can Be Coordinated in CASM?

Users can manage a large variety of detailed data related to public safety emergency communications. Different types of data are made available as map overlays in Map View or as tabular data in Table View. In both Map View and Table View filters can be utilized to locate and display specific information. Figure 2 contains a description of the resources included in each data type.

In Map View CASM users can view data in any number of layers, individually or simultaneously, as overlays on a Google Maps interface. Each data layer has filters specific for it. From the map interface users can view or edit detailed information about each resource.

In Table View users can sort and filter resources by their attributes, one data type at a time, Users can also view, edit, export, and validate information while in Table View.

Some data types are available to all users, such as Personnel information, while other types require access approval from the Access Manager for the organization that maintains the information.

You Don't Know What You Don't Know

CASM has an automated access request system that enables agency, regional, state, and national planners to identify additional emergency communications resources in neighboring states, counties, or overlapping jurisdictions and to reach out to their owners for possible coordination. Users can submit an automated request for access to any data in the system. The request is routed to the appropriate Access Manager for approval. The user is automatically notified of approval and can immediately access the information.

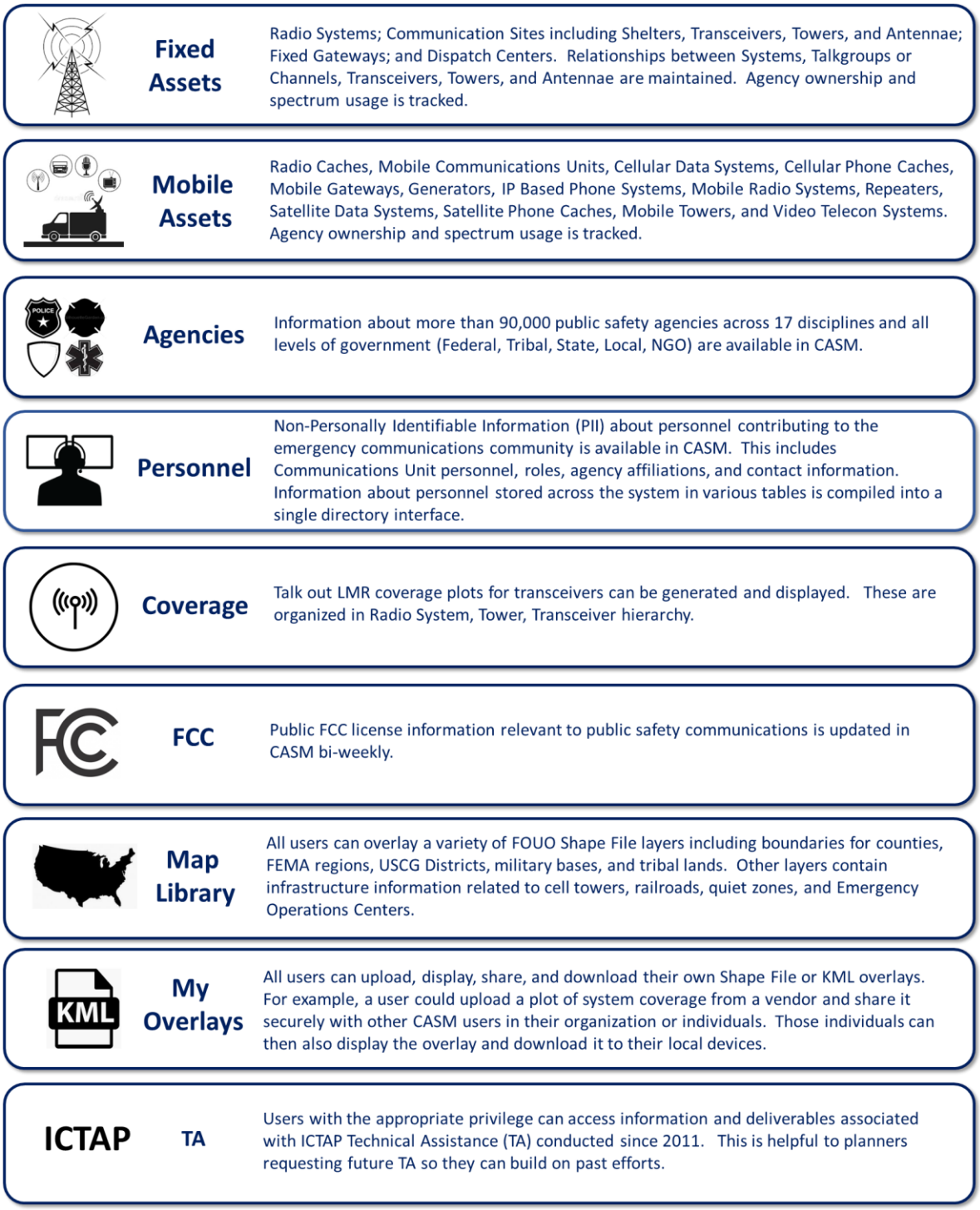

Figure 2: CASM Data Types

CASM Benefits

CASM provides communications resource owners and planners with a uniquely valuable system that combines several key benefits, as described in **Table 1**.

Benefit	Explanation
Common Sharing Interface	In order for agencies at all levels to plan, it is critical for all personnel involved to be accessing the same database of information. CASM provides that single data set via a browser interface that also standardizes the terminology and technical standards used during the planning process, in accordance with the National Incident Management System.
No Cost	The CASM system is provided by CISA at no cost to all public safety agencies and NGOs nationwide, supporting any discipline and level of government. The participating agency's sole responsibility is enter their data and to keep their information up-to-date.
Agencies Own Data and Control Access	The public safety agencies have full control over their resource information and access to it. Each organization using CASM designates an Access Manager to control access for that organization's information. Apart from system administration and operation, DHS does not access CASM information without permission from the owning organization. CASM data is not provided to any external organizations or systems.
Non-Proprietary Inventory Formats	All the information in the CASM database is available for export in Comma Separated Variable format. Pre-defined reports for some information is also available for output. The CASM Help Desk provides support to import large data sets into the system.
Resource Relationships are Maintained	CASM also maintains the relationships that exist between resources. See **Figure 3** for an overview of the major relationships maintained. These relationships are what enable planners to evaluate interoperability opportunities and to identify operability gaps.
AWS Reliability	CASM is hosted on virtual servers in an Amazon Web Services FEDRAMP environment. This state of the art technology includes redundancy and resilience which provides the user with extremely high system availability. Notwithstanding this availability, CASM is not intended to be used for tactical communications planning, although it has been on occasion.
DHS ATO Security	CASM has a DHS Authority To Operate (ATO) which requires it to meet Federal Information System Management Act cybersecurity standards, including frequent security updates, exercises, and vulnerability scanning. CASM data is categorized as "For Official Use Only".

Table 1. CASM's value is based on a unique combination of benefits

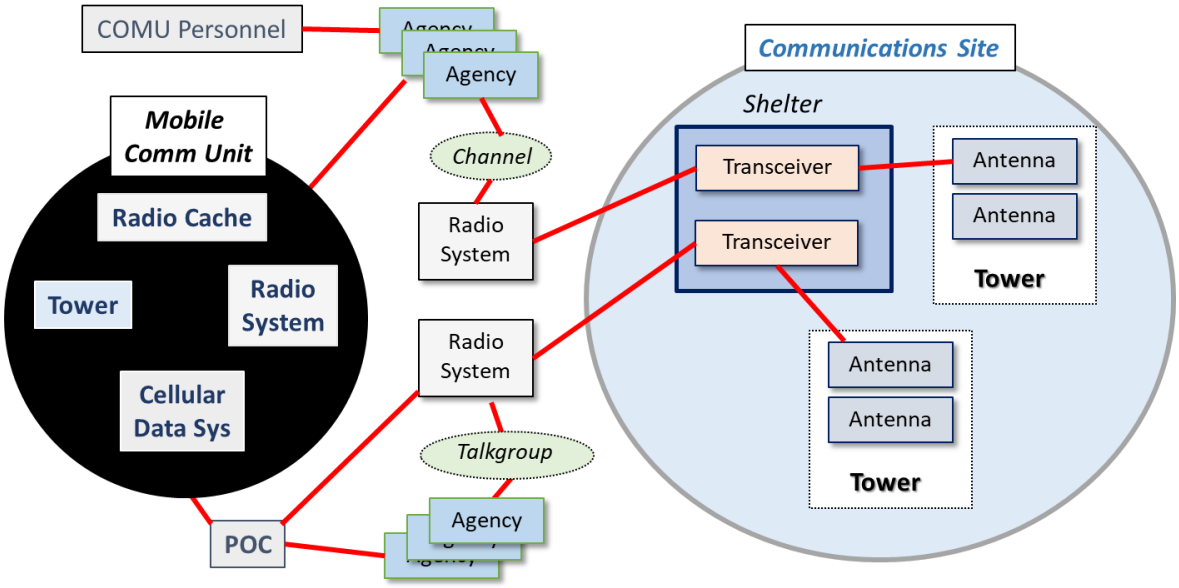

Figure 3: Major resource relationships maintained in CASM

Additional Benefits

CASM provides several additional benefits supporting emergency communications planning.

Agency Interoperability Reports. This PDF report details the channels and/or talkgroups, sorted by agency, that an agency can use to communicate with another agency.

ICS 217A Report. This is an Excel formatted report detailing what spectrum resources are available for communication between selected agencies.

Tactical Interoperable Communication Plan (TICP) Report. This report provides the detailed equipment tables found in regional TICPs.

Media Library. This is a secure "Dropbox-like" resource that allows any CASM user to share any media type (document, video, etc.) privately with other CASM users, individually or by organization.

Analytics. Users can access metrics regarding CASM usage and database content, which may be filtered by either location or organization.

Media with any object. Users with edit privilege can attach any media type (documents, pictures, video, etc.) to the detailed information about any resource.

CASM Resource Finder. This mobile app, available from both the Apple Store and Google Play, allows CASM users to access detailed information about CASM Mobile Assets from their mobile device, including POC information. Users can use a radius or geographic search to locate assets closest to them.

Usage and Data Validation

Planners, managers, and tacticians are all able to utilize the same data set, making coordination between levels of control both efficient and effective. Examples of usage at various levels are presented in **Figure 4.** Imagine, for example, that all the CASM use described occurs within or including a single state prior to and during hurricane season.

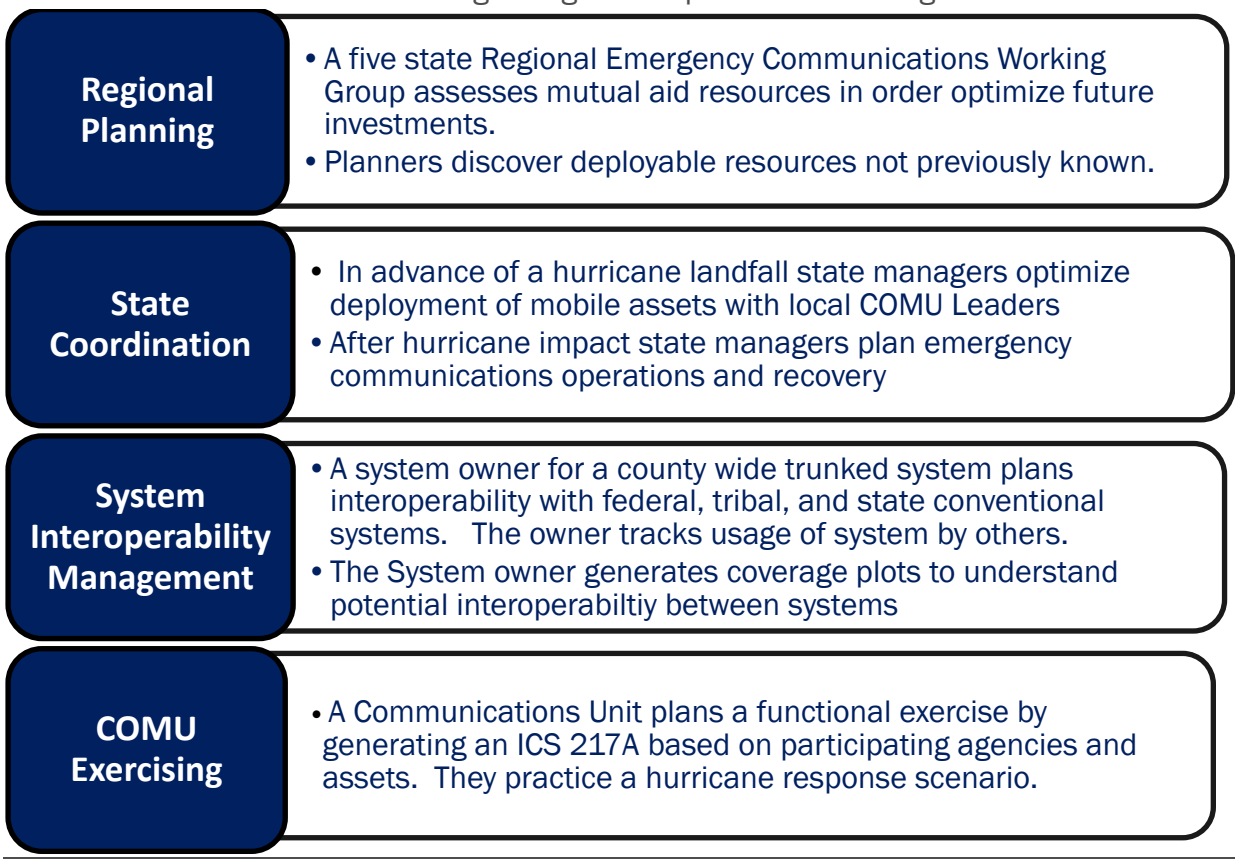

Figure 4: CASM usage scenario examples

It is important to note that because CASM usage is voluntary, with approximately 1200 active users, the density of resource information varies across organizations and geographically (See **Figure 5**). Most organizations using CASM divide the data entry and maintenance responsibilities across their organizations. Some states have organized to use CASM statewide, while use in many states is isolated to a few counties where it is valued.

To enable users to periodically confirm the accuracy of their organization's information CASM provides the means for users to annually designate their data as "valid". Agencies owning resources are most familiar with the detail about them and are the best users to validate accuracy.

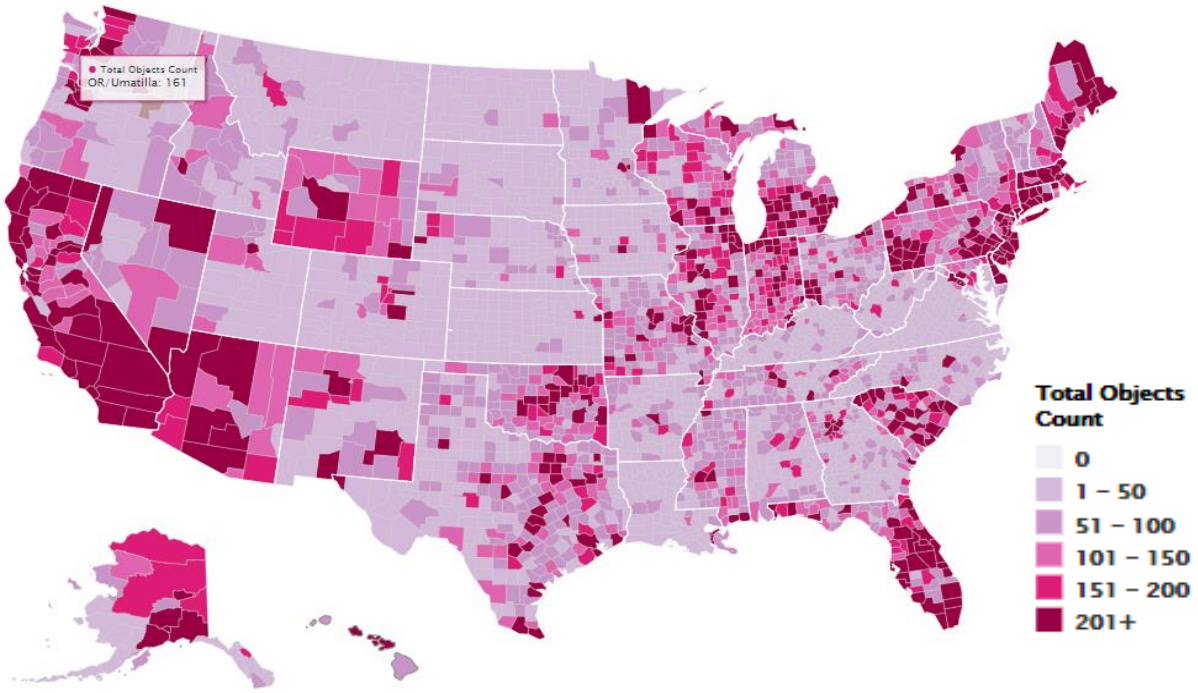

Figure 5: Total number of CASM Objects (317,925) by county (July 2019)

Join the CASM community

Table 2 provides information that enables you to participate in the CASM community and improve public safety emergency communications.

Topic	Detail
URL	You can find the CASM landing page at CASM.DHS.GOV. There you can fill out a form to request access.
Access Requests	Access requests will be automatically forwarded to your organization's Access Manager (AM) for review and approval. If your organization does not yet have an AM designated in CASM you may be asked by our Help Desk if you would like to serve as the AM for your organization.
More Information	If you have any questions, would like a demonstration, need on-line training, or have feedback regarding CASM please contact our Help Desk at CASMHELP@HQ.DHS.GOV. The Help Desk is available M-F, 7-5 Pacific Time.

Table 2: Getting Started in CASM